

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

The amendments herein are considered to be merely clarifying and non-narrowing, and no estoppel should be deemed to attach thereto. The following remarks are presented in view of the comments in the Advisory Action.

Claims 26, 27, 29-32, 34-39, and 41-49 have been amended. Support for the subject matter of the amended claims is provided in the paragraphs [0180]-[0189] of the published specification. (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

Claims 26-36 and 38-49 stand rejected, under 35 USC §102(a), as being anticipated by 3GPP TS 25.309 v6.2.0 (hereinafter 3GPP 309). Claim 37 stands rejected, under 35 USC §103(a), as being unpatentable over 3GPP 309 in view of 3GPP TSG-RAN WG2 #46 (hereinafter 3GPP WG2). The Applicants respectfully traverse the rejections based on the points set forth below.

Claim 26 now defines a method for communicating control information associated with uplink data on an Enhanced Dedicated Channel (E-DCH) of a Universal Mobile Telecommunication System (UMTS). According to this method, a happy bit is transmitted, by a user equipment to a serving cell node, indicating, in the set condition, that the user equipment could use more than a maximum amount of uplink resources allowed by scheduling grants for transmitting scheduled uplink data via the E-DCH. The happy bit is not set (i.e., happy

condition) if the user equipment transmits uplink data via the E-DCH without utilizing the maximum amount of uplink resources, for scheduled uplink data, as allowed by scheduling grants. The claimed subject matter is advantageous in that it supports granting additional communication resources to a user equipment only if the user equipment is using the maximum uplink resources granted to it by a serving cell (see specification page 18, lines 26-31). Additionally, the claimed subject matter further advantageously supports a serving cell's ability to determine whether a non-serving cell, within the user equipment's active set, has requested the user equipment to reduce its uplink resource utilization during a soft handover (see page 18, line 31, through page 19, line 2).

Based on the remarks presented in the Advisory Action, the Applicants believe the Office is of the opinion that a user equipment (UE) is "unhappy," according to 3GPP 309, section 9.3.1.2, if both of the following criteria are met: (1) UE has Power available to send at higher data rates (E-TFCs) (link to E-TFC selection/elimination over recent past is FFS, filtering is FFS), and (2) Total buffer status would require more than X TTIs with the current Grants (where X is configurable). Details are FFS."

However, the Advisory Action proposes that:

"... as best understood by the Examiner in all instances where the user equipment is unhappy, the user equipment has more power headroom than it is allowed to use. The user equipment is unhappy because it has the resources to transmit at higher power level but it is not allowed to [do] so." (emphasis added)

The Applicants respectfully submit that the Advisory Action reflects a basic misunderstanding of the first criterion (i.e., 3GPP 309's criterion 1, which is respectively criterion (a) of claim 32). This "power headroom" criterion is not related to the current resource

utilization or resource allocation to the user equipment, but to a general power status of the user equipment (see specification page 16, lines 8-23). The term "power headroom" thus indicates the general capability of the user equipment to transmit at a higher power level. The power headroom refers only to the transmit power capability of the user equipment, i.e., there is a certain maximum transmit power that cannot be exceeded by the user equipment, for example due to its capabilities and construction. Therefore, in some cases the user equipment is power-limited, meaning that the user equipment is incapable of further increasing its transmission power.

The power headroom is thus unrelated to the resource allocation (or utilization) of the user equipment. Hence, the underlined statement in the quoted portion of the Advisory Action provided above is not correct, as it implies a relation of the power headroom criterion to the resource allocation to the user equipment.

Furthermore, the statement in the Advisory Action that "*the user equipment is unhappy because it has the resources to transmit at higher power level but it is not allowed to [do] so*" is also not correct. The question of whether the user equipment is "happy" or "unhappy" is a matter of definition according to the criteria of 3GPP 309. 3GPP 309 requires the user equipment to be deemed "unhappy" if the user equipment not only has "*Power available to send at higher data rates,*" but if in addition there is sufficient data in the buffer such that the "*Total buffer status would require more than X TTIs with the current Grants.*"

Hence, it should be noted that, by the definition of 3GPP 309, the user equipment is unhappy only if both criteria are met, and not if only the power headroom is sufficient. In addition, the aspect of resource allocation or utilization, as implied by the Advisory Action's

statement "*but it is not allowed to [do] so,*" is not considered in 3GPP 309 at all, as apparent from the criteria stated therein.

It is the Applicants' claimed subject matter that introduces the aspect of resource utilization to define when a user equipment is "happy" and when it is "unhappy". More specifically, the claimed third criterion (c) relates to the current utilization of allocated resources. As stated in the independent claims, the happy-bit is not set (i.e., the user equipment is "happy" = is not requesting allocation of more resources), if the user equipment is "not utilizing the maximum amount of uplink resources for scheduled uplink data as allowed by scheduling grants" (see, for example, claim 26). Claim 32 states that the happy-bit is set (i.e., the user equipment is "unhappy" = is requesting allocation of more resources), if in addition to criteria (a) and (b) also criterion (c) is met -- "the user equipment is utilizing the maximum uplink resources set by scheduling grants for scheduled uplink data transmission."

Furthermore, Applicants have the impression that the Office may consider criterion (a) of claim 32 being fulfilled to imply also that criterion (c) must be fulfilled, as the Office apparently assumes a relation between power headroom and resource allocation. This is not the case as outlined by way of example below.

Consider, for example, a case where a user equipment is not power limited, i.e., the user equipment can transmit with higher transmit power and therefore the power headroom criterion is fulfilled (criterion (a) as per claim 32 is true). Further, assume that the buffer status criterion is also fulfilled (criterion (b) as per claim 32 is true), i.e., there is sufficient data in the user equipment's buffer.

Under this assumption, there could be still situations where the user equipment cannot use the full resource allocated by a Node B. One such exemplary limitation is the user equipment being processing power limited, which may, for example, occur in Frequency Division Duplex (FDD) operation, where a user equipment needs to receive and decode data on a downlink and simultaneously code and transmit data on an uplink so that its processing capabilities need to be distributed to both tasks, imposing limitations. For example, when a UE is scheduled with high data rates on the downlink it might not be possible to simultaneously generate big transport blocks for the uplink transmission, i.e., processing power capability is not sufficient to decode downlink data (complexity and processing power requirements increase non-linearly with increasing transport block size of the downlink data) and build an uplink transport block for transmission simultaneously. Due to such exemplary limitation, the user equipment may be unable to utilize the maximum allocated resources, so that criterion (c) as per claim 32 is not fulfilled, although criteria (a) and (b) are fulfilled.

Accordingly, Applicants submit that 3GPP 309 does not anticipate the subject matter now defined by claim 26.

Independent claims 38 and 45 now similarly recite the above-mentioned subject matter distinguishing method claim 26 from the applied references, but claim 38 does so with respect to an apparatus and claim 45 does so with respect to a computer readable medium. Therefore, allowance of claims 26, 38, and 45 and all claims dependent therefrom is deemed to be warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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Date: May 20, 2009
JEL/DWW/att

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